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FLORISTIC CHARACTERISTICS AND FEATURES OF USE OF SPECIES INCLUDED IN THE GENUS HAWTHORN (*Crataegus* L.)

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ФЛОРИСТИЧЕСКАЯ ХАРАКТЕРИСТИКА И ОСОБЕННОСТИ ИСПОЛЬЗОВАНИЯ ВИДОВ РОДА БОЯРЫШНИК (*Crataegus* L.)

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Abstract. Hawthorn (*Crataegus*) is a plant consisting of various species of thorny shrubs or small trees belonging to the Rosaceae family. The genus Hawthorn (*Crataegus* L.) has 20 species in the flora of Azerbaijan and 20 species in the Nakhchivan Autonomous Republic: *Crataegus pontica* C.Koch., *Crataegus orientalis* Pall. ex Bieb., *Crataegus meyeri* Pojark., *Crataegus szowitsii* Pojark., *Crataegus pentagyna* Waldst. & Kit., *Crataegus pseudoheterophylla* Pojark., *Crataegus cinovski* Kassymova., *Crataegus sanguinea* Pall., *Crataegus curvisepala* Lindm., *Crataegus caucasica* C. Koch. Hawthorn species are found in various ecological zones, including mountainous, flat and semi-desert areas. The climatic conditions of each region affect the phenological stages of plant development. In the Nakhchivan Autonomous Republic, hawthorn is found in almost all altitude zones (800-2500 m). The greatest amplitude of distribution belongs to the species *Crataegus orientalis*. It is found in areas from the foothill zone to the subalpine zone (900-2250 m). In the middle zone, the species *C. cinovskisii*, *C. szovitsii*, *C. Tournefortii*, *C. pojarkoviae* and *C. pontica* are predominantly common. However, in some cases, the distribution zone of the species *C. pontica* goes down, and the species *C. pojarkoviae* rises to the high-mountain zone. The species *Crataegus caucasica*, *C. rhipidophylla*, *C. pseudoheterophylla* and *C. zangezura* are found almost from the low-mountain zone to the subalpine zone, and the species *C. atrosanguinea* and *C. eriantha* are found in the low-mountain and middle-mountain zone. The distribution zone of the species *C. meyeri* sometimes reaches an altitude of 2350 m. The flower lump of the hawthorn species, which is used as a food and medicinal plant, is used in the treatment of cardiovascular diseases and to regulate heart rhythm. Ripe fruits are also useful for lowering blood pressure in folk medicine. The fruits and flowers of hawthorn are used in medicine to treat cardiovascular diseases, circulatory problems and high blood pressure. The plant is rich in flavonoids, antioxidants and tannins, so it strengthens the immune system and has an anti-inflammatory effect. Hawthorn is also used as an ornamental plant.

Аннотация. Боярышник (*Crataegus*) – растение, состоящее из различных видов колючих кустарников или небольших деревьев, принадлежащих к семейству розоцветных. Род Боярышник (*Crataegus* L.) насчитывает 20 видов во флоре Азербайджана и 20 видов в Нахчыванской Автономной Республике: *Crataegus pontica* С.Коч., *Crataegus orientalis* Pall. ex Bieb., *Crataegus meyeri* Pojark., *Crataegus szowitsii* Pojark., *Crataegus pentagyna* Waldst. &

Kit., *Crataegus pseudoheterophylla* Pojark., *Crataegus cinovski* Kassymova., *Crataegus sanguinea* Pall., *Crataegus curvisepala* Lindm., *Crataegus caucasica* С. Koch. Виды боярышника встречаются в различных экологических зонах, включая горные, равнинные и полупустынные районы. Климатические условия каждого региона влияют на фенологические стадии развития растения. На территории Нахчыванской Автономной Республики боярышник встречается практически во всех высотных поясах (800-2500 м). Наибольшая амплитуда распространения принадлежит виду *Crataegus orientalis*. Встречается на территориях от предгорного пояса до субальпийского пояса (900-2250 м). В средней полосе распространены преимущественно виды *C. cinovskisii*, *C. szovitsii*, *C. Tournefortii*, *C. pojarkoviae* и *C. pontica*. Однако в ряде случаев зона распространения вида *C. pontica* опускается вниз, а вида *C. pojarkoviae* поднимается до высокогорного пояса. Виды *Crataegus caucasica*, *C. rhipidophylla*, *C. pseudoheterophylla* и *C. zangezura* встречаются практически от низкогорного пояса до субальпийского пояса, а виды *C. atosanguinea* и *C. eriantha* — в низкогорном и среднем горном поясе. Зона распространения видов *C. meyeri* иногда достигает высоты 2350 м. Цветочный комок видов боярышника, который используют как пищевое и лекарственное растение, применяют при лечении сердечно-сосудистых заболеваний и для регуляции сердечного ритма. Спелые плоды также полезны для снижения артериального давления в народной медицине. Плоды и цветы боярышника используются в медицине для лечения сердечно-сосудистых заболеваний, проблем с кровообращением и высокого кровяного давления. Растение богато флавоноидами, антиоксидантами и дубильными веществами, поэтому укрепляет иммунитет и оказывает противовоспалительное действие. Боярышник также используется как декоративное растение.

Keywords: hawthorn, phenological observation, cardiovascular diseases, *Crataegus orientalis*, *Crataegus meyeri*, *Crataegus pentagyna*.

Ключевые слова: боярышник, фенологическое наблюдение, сердечно-сосудистые заболевания, *Crataegus orientalis*, *Crataegus meyeri*, *Crataegus pentagyna*.

In the Nakhchivan Autonomous Republic, it is rare to find pure forests surrounded by wild fruit and berry plants. They are distributed singly or in small groups in the upper, middle and partly lower mountain belt, on the edges of the forest. Wild fruit and berry plants are one of the main subdominant plants in the formation of forests within various groups of formations in arid and sparse forests. According to the current standards and technical conditions, harvesting of wild fruit and berry plants is allowed only during the ripening period. Therefore, it is necessary to take into account the large difference in the ripening time of fruits depending on the absolute altitude of the area at the time of harvesting. The second half of September and the first half of October in the highlands should be considered the most favorable period for harvesting fruits in the mid-mountain belt. Currently, the population uses very little of these natural resources, and hundreds of tons of products remain unused. Although some wild fruit and berry plants do not have free food value in themselves, they are used to improve the taste of certain food products and give them a pleasant aroma. Wild fruits and berries contain vitamins, organic acids, various mineral, aromatic, tannic, pectin substances, etc., which are very useful for the human body. rich Fruits of cultivated varieties lag significantly behind in these indicators. Wild fruit and berry plants live longer. The vegetation and fruiting periods are longer. They have high ecological plasticity, are resistant to pests and fungal diseases. Wild fruit and berry plants also participate to varying degrees in the formation of

the forest ecosystem and have a large reserve. Among them are wine, vinegar, jam, preserves, lavash, jelly, marmalade, kvass, juices, kissels, soft drinks, etc. you can cook food [1, 3, 6].

Material and methodology of the study

The methodology for studying the bioecological and beneficial properties of the hawthorn plant includes a number of methods related to its biology, ecology and role in the growing environment. The following methods can be used at this time: When studying the bioecological properties of the hawthorn plant, the morphological and physiological indicators of the plant, its response to various environmental factors (temperature, lighting, soil composition, humidity, etc.) are studied. Ecological models are used to determine the potential for the spread of hawthorn in various ecosystems. The methodology for studying phytocenological features is associated with the range of the plant, its interaction with other plant species in the natural environment and its role in the ecosystem. Field observations are carried out to determine the range. plant and study its relationship with other vegetation in the areas of its habitat. In different areas, square plots of a certain area are allocated and in these areas the density and species diversity of hawthorn and other plants are determined. A list of other plant species is preserved in the habitat of hawthorn, the structure of the phytocenosis is studied. GIS technology is used to map hawthorn habitats and ecological compatibility [2, 4, 5].

Discussion and conclusions of the study

Hawthorn — *Crataegus* L. It is a tree or shrub with alternate, simple, pinnate-veined, usually pinnate or lobed, serrated leaves. The flowers are pentamerous, collected in a compound or simple umbel. Sepals and petals are formed from 5, ovary 1-2-5 fruit leaves and 1-2, sometimes 3-5 nests. Fruits are yellow, red and black, fleshy. 20 in Azerbaijan and Nakhchivan AR 20 spread [6].

Hawthorn pontica — *Crataegus pontica* C. Koch. It is a grayish tree or shrub without thorns 3-4 m high. Leaves are soft-hairy on both sides, inverted-ovate-cuneate, 3-5 deeply dissected, entire or with large serrated segments at the tip. It has white flowers. It is found on dry rocky slopes of the middle mountain zone. Ch. and m. B, VII-IX, X. Mesoxerophyte. Geographical type: Northern Iran. Distribution: Nakhchivan Highlands.

Meyer's hawthorn — *Crataegus meyeri* Pojark. The branches are a thorny tree or shrub. The bark is grayish-red-brown. The leaves are softly pubescent on both sides, inverted-ovate, rhombic, 5-, sometimes 7-partite, with a saw-tooth lobe at the tip. The flower group has 10-15 flowers. Its crown is white. The fruits are dull red. Common on dry rocky slopes and in the forests of the mid-mountain and subalpine belt. Ch. and m. B-IX, X. Mesoxerophyte. Geographical type: Western Asia. Distribution: KQ, Diabar, Lankaran Mountain, Nakhchivan Mountain. General distribution: Balkan-Asia Minor, Iran.

Hawthorn Sovich — *Crataegus szowitsii* Pojark. Branches are dull grayish, young branches are densely white, pubescent and prickly, leaves are thick, inverted-ovate-rhombic, usually 5-lobed, lobes are wide, serrated at the top, the middle lobe is wedge-shaped, the leaf stalk is short. Its crown is white, the fruits are black and red. Common in rocky and shrubby areas of the central zone. C. and m. B-IX, X. Mesoxerophyte. Geographical type: Western Asia-Mediterranean-Europe. Distribution: BQ, KQ, Lankaran, Alazan-Eyrichay, Nakhchivan. General distribution: Balkan-Asia Minor, Central Europe.

Hawthorn oriental — *Crataegus orientalis* Pall. former Bib. Height 3-4(5) m. is a grayish, thorny tree or shrub. Stems are hairy, leaves are softly hairy on both sides, oblong-ovate, 3-5-lobed and with 3-4 teeth in the upper part. White flowers are collected in a group of climbing flowers. Fruits are reddish-orange.

It is common on dry slopes and in shrubs of the middle and subalpine zones. Ch. and m. B, VI-IX, X. Mesoxerophyte. Geographical type: Eastern Mediterranean. Distribution: BQ, KQ, Lankaran Mountain, Nakhchivan. General distribution: Balkan-Asia Minor.

Five-lobe hawthorn — *Crataegus pentagyna* Waldst. & Nabor. It is a tree or shrub. The leaves are bare, wedge-shaped at the base, ovate, wide and short with 3-5 lobes, the lobes are wide and serrated. The corymb is multi-flowered. The petals are white. The column is 3-5. The fruits are black. It is widespread in forest and shrub regions of the mid-mountain and subalpine belts. Ch. and m. B-IX, X. Mesophyte. Geographical type: Western Asia-Mediterranean-Europe. Distribution: BQ, KQ, Lankaran, Alaz.-Eyrichay, Nakhchivan. General distribution: Balkan-Asia Minor, Ort. Europe.

False hawthorn — *Crataegus pseudoheterophylla* Pojark. The bark of the branches is gray, the leaves of the fruit-bearing branches are inverted-ovate or oblong-oval, serrated or trilobate at the apex, the leaves of the sterile branches are 5-7-partite, the edges are sharply serrated. lobes. There are 8-15 flowers in the flower group, the fruits are ovoid, brown-red. It is found on dry rocky and shrubby slopes of the mid-mountain and subalpine belts. Ch. and m. VI-IX. Mesoxerophyte. Geographical type: Western Asia. Distribution: Nakhchivan. General distribution: Iran. *Crataegus cinovskie* Kassymova -*Crataegus cinovskie* Kassymova. This tree is 10 m tall. Ch. and m. B-X. In the foothills and low-mountain zones it is found along the sides of roads, among vineyards. Collected by T.A. Gasimova from the suburb of Chalkhangala, Babek district. It is a mesophyte. Geographical type: Atropatene. Distribution: KQ, Nakhchivan. General distribution: Caucasus.

Bloody-red hawthorn — *Crataegus sanguinea* Pall. It is a bushy plant, the bark is dull gray, slightly prickly. The leaves are dull green, shiny above, pubescent below, long wedge-shaped at the base and longer petioles. The flower group is compact. The fruits are orange-red, juicy. Common in the forests of the middle mountain zone. Ch. and m. B-IX, X. Mesophyte. Geographical type: It is unknown. Distribution: Nakhchivan. General distribution: Western Europe.

Caucasian hawthorn — *Crataegus caucasica* C. Koch. The trunk is a bush with brown bark without thorns. The leaves are large, wedge-shaped at the base, bare, bare or sparsely pubescent. 5-7 parts, the outer lobes of the leaf are wide, the middle lobe is serrated.

The corymbose flower group has 5-15 flowers. Ripe fruits are black-violet inside, with open dots on the surface. It is found on dry rocky slopes of the middle mountain belt. Ch. and m.-h. Mesoxerophyte. Geographical type: Northern Atropatene. Distribution: KQ, Nakhchivan. General distribution: Caucasus.

Crataegus curvisepala Lindm. Branches without thorns or a shrub with small thorns. The bark of the trunk is dull gray. The leaves are light green, bare, ovate, 5-7-segmented, with sharp serrated lobes. The corymb is wide, has 6-12 flowers. The fruits are elliptic, red, one-seeded. It is found in forests and thickets of the mid-mountain zone. Ch. and m. V-IX. Mesophyte. Geographical type: Central Europe. Distribution: BQ, KQ, Lankaran Alazan-Eyrichay, Nakhchivan Highlands. General distribution: Scandinavia, Central Europe, Balkan-Asia Minor.

Hawthorn fruits and flowers are used in medicine to treat cardiovascular diseases, circulatory problems and high blood pressure. The plant is rich in flavonoids, antioxidants and tannins, so it strengthens the immune system and has an anti-inflammatory effect. Hawthorn species (*Crataegus*) are rich in various biochemical substances, and their composition has beneficial properties for health. The following main biochemical substances are present in the fruits, leaves and flowers of hawthorn: Flavonoids have a strong antioxidant effect and are beneficial for the cardiovascular system. Hawthorn is rich in phenolic compounds, these substances help neutralize free radicals, providing an antioxidant effect. Hawthorn contains important vitamins such as vitamin C, vitamin A, vitamin E and vitamin K. Vitamin C, in particular, strengthens the immune system and has an antioxidant effect. Hawthorn contains minerals such as potassium, calcium, magnesium, iron and

zinc. These minerals play an important role in various functions of the body, including the functioning of the heart muscle and nervous system. Hawthorn is rich in carboxylic acids and organic acids. These acids have a positive effect on the gastrointestinal system and improve digestion. Proanthocyanidins have anti-inflammatory and antimicrobial effects and help increase the elasticity of blood vessels. These ingredients explain the health benefits of hawthorn, as it supports cardiovascular health, improves blood circulation and has antioxidant properties.

Results

The genus Hawthorn (*Crataegus* L.) belongs to the Flower family, 20 species are distributed in the flora of Azerbaijan, and 20 species in the Nakhchivan Autonomous Republic: *Crataegus pontica* C.Koch., *Crataegus orientalis* Pall. ex Bieb., *Crataegus meyeri* Pojark., *Crataegus szowitsii* Pojark., *Crataegus pentagyna* Waldst. & Kit., *Crataegus pseudoheterophylla* Pojark., *Crataegus cinovskisii* Kassymova., *Crataegus sanguinea* Pall., *Crataegus curvisepala* Lindm., *Crataegus caucasica* C.Koch.

The flower bud of hawthorn species, which is used as a food and medicinal plant, is used in the treatment of cardiovascular diseases and for the regulation of heart rhythm. Ripe fruits are also useful for lowering blood pressure in traditional medicine.

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